CLAIMS

1. A device for automatic detection of states of motion and rest, comprising:

a first inertial sensor having a first preferential detection axis;

a converter coupled to said first inertial sensor and supplying a first signal correlated to forces acting on said first inertial sensor according to said first preferential detection axis;

a first processing stage structured to process said first signal and supply a second signal correlated to a dynamic component of said first signal; and

a first threshold comparator supplying a pulse when said second signal exceeds a pre-determined threshold.

2. The device according to claim 1 wherein said first processing stage comprises a filter, supplying a third signal correlated to a static component of said first signal, and a subtractor element, for subtracting said third signal from said first signal.

3. The device according to claim 2 wherein said first inertial sensor is a micro-electro-mechanical sensor with capacitive unbalancing.

4. The device according to claim 1, further comprising a second inertial sensor having a second preferential detection axis, the first and second inertial sensors being of a micro-electro-mechanical type with capacitive unbalancing, the first preferential detection axis and the second preferential detection axis being orthogonal to one another.

5. The device according to claim 4 said first inertial sensor and said second inertial sensor are selectively connectable in sequence to said converter.

6. The device according to claim 5, comprising a third inertial sensor of a micro-electro-mechanical type with capacitive unbalancing, having a third preferential detection axis, orthogonal to said first preferential detection axis and to said second preferential detection axis.

7. The device according to claim 6, further comprising a switch device positioned to selectively connect said first inertial sensor, said second inertial sensor and said third inertial sensor in sequence to said converter.

8. The device according to claim 1, further comprising a second inertial sensor having a second preferential detection axis that is transverse to the first preferential detection axis.

9. The device according to claim 8, further comprising:

a multiplexer connected between the inertial sensors and the converter to selectively electrically connect each of the inertial sensors to the converter, the converter supplying a third signal correlated to forces acting on said second inertial sensor according to said second preferential detection axis;

a second processing stage structured to process said third signal and supply a fourth signal correlated to a dynamic component of said third signal;

a second threshold comparator supplying a pulse when said fourth signal exceeds the pre-determined threshold; and

a demultiplexer connected between the converter and the first and second processing stages to selectively supply the first and third signals to the first and second processing stages, respectively.

10. The device according to claim 9, further comprising:

a phase generator connected to the multiplexer, converter, and demultiplexer and structured to provide timing signals that coordinate operations of the multiplexer, converter, and demultiplexer.

11. A portable electronic apparatus, comprising:

a supply source;

a plurality of user devices alternatively connected to said supply source in a first operative state, and disconnected from said supply source in a second operative state; and

deactivation means connected to said user devices for setting said user devices in said second operative state;

activation means for setting the user devices in the first operative state, said activation means including:

a first inertial sensor having a preferential detection axis;

a converter coupled to said first inertial sensor and supplying a first signal correlated to forces acting on said first inertial sensor according to said preferential detection axis;

a first processing stage structured to process said first signal and supply a second signal correlated to a dynamic component of said first signal; and

a first threshold comparator supplying an activation pulse when said second signal exceeds a pre-determined threshold.

12. An apparatus according to claim 11 wherein, in the presence of the activation pulse, said user devices are in said first operative state.

13. The apparatus according to claim 11 wherein said first processing stage comprises a filter, supplying a third signal correlated to a static component of said first signal, and a subtractor element, for subtracting said third signal from said first signal.

14. The apparatus according to claim 11 wherein said first inertial sensor is a micro-electro-mechanical sensor with capacitive unbalancing.

15. The apparatus according to claim 11, wherein said activation means further include a second inertial sensor having a second preferential detection axis, the first and second inertial sensors being of a micro-electro-mechanical type with capacitive unbalancing, the first preferential detection axis and the second preferential detection axis being orthogonal to one another.

16. The apparatus according to claim 15, wherein said activation means further include a third inertial sensor of a micro-electro-mechanical type with capacitive unbalancing, having a third preferential detection axis, orthogonal to said first preferential detection axis and to said second preferential detection axis.

17. The apparatus according to claim 11, wherein said activation means further include a second inertial sensor having a second preferential detection axis that is transverse to the first preferential detection axis.

18. The apparatus according to claim 17, wherein said activation means further include:

a multiplexer connected between the inertial sensors and the converter to selectively electrically connect each of the inertial sensors to the converter, the converter supplying a third signal correlated to forces acting on said second inertial sensor according to said second preferential detection axis;

a second processing stage structured to process said third signal and supply a fourth signal correlated to a dynamic component of said third signal;

a second threshold comparator supplying a pulse when said fourth signal exceeds the pre-determined threshold; and

a demultiplexer connected between the converter and the first and second processing stages to selectively supply the first and third signals to the first and second processing stages, respectively.

19. The apparatus according to claim 9, wherein said activation means further include:

a phase generator connected to the multiplexer, converter, and demultiplexer and structured to provide timing signals that coordinate operations of the multiplexer, converter, and demultiplexer.

20. A method for automatic detection of motion of a portable electronic device, comprising:

sensing motion of the device along a first preferential detection axis;

supplying a first signal correlated to forces acting on the device according to the preferential detection axis;

processing the first signal and supplying a second signal correlated to a dynamic component of the first signal; and

supplying an activation pulse when the second signal exceeds a first pre-determined threshold.

21. The method of claim 20 wherein the processing comprises filter the first signal to create a third signal correlated to a static component of the first signal, and subtracting the third signal from the first signal to create the second signal.

22. The method of claim 20, further comprising

sensing motion of the device along a second preferential detection axis that is orthogonal to the first preferential detection axis; and

supplying a third signal correlated to forces acting on the device according to the second preferential detection axis;

processing the third signal and supplying a fourth signal correlated to a dynamic component of the third signal; and

supplying the activation pulse when the fourth signal exceeds a second pre-determined threshold.

23. The method of claim 20, further comprising:

receiving the activation signal at an operation circuit of the device, the operation circuit being in a stand-by condition prior to receiving the activation signal; and

activating the operation circuit into an active condition in response to receiving the activation signal.